HABITAT CONDITIONS

Channel Alterations

No large scale channelization projects have been conducted in the Lamine River Basin. Approximately 92% of the mainstem Lamine River and Flat Creek are listed by MDNR (1986) as unaltered. Many small channelization projects are evident on topographic maps and some are associated with road building. Personal interviews of landowners by MDC Fisheries Regional personnel have revealed other small (less than .5 mile) channelization projects along reaches where meanders were encroaching on farmland or pasture. Soil survey personnel (NRCS) related that other alterations such as levees are also limited in the Lamine River basin. Most levees in the basin are associated with channelization projects. Stream Habitat Assessment Device (SHAD) surveys also revealed little channel alteration in the basin. A combination of on-site inspection and review of topographic maps and/or aerial photos is necessary to determine channelization impacts within a stream reach.

Gravel removal from streams is also evident in the Lamine River Basin. Active and inactive gravel operations have been observed by fisheries management personnel during SHAD surveys and stream contact work. Like channelization, gravel operations are not easy to document on generalized maps but should be documented along critical reaches identified for stream management projects.

Unique Habitat

Two unique habitats exist in the Lamine River Basin. Elk Lick Spring is a small spring on Heath's Creek in Saline County near Marshall. The spring has an average discharge of 32,000 gallons per day (Vineyard and Feder 1982). A series of riffles on the mainstem Lamine River also are important as possible walleye spawning sites. Fisheries management personnel have captured walleye in riffles along the reach of the Lamine River extending between Heath's Creek and Muddy Creek. Riffle areas farther upstream also may provide walleye spawning habitat, although the species has not been collected at those sites.

Because the Lamine River is a tributary of the Missouri River, it provides important backwater habitat that may be critical to fish production and diversity in the big river. Brown (1989) found densities of larval fish of several big river taxa to be higher in tributaries, including the Lamine River, than in the Missouri River. White bass, blue suckers and freshwater drum larvae were found almost exclusively in the Lamine River, the largest tributary sampled. A combination of deep water and gravelly substrate is unique in larger tributaries such as the Lamine and Gasconade Rivers and this type of habitat may enhance production and diversity of fishes in the Missouri River.

Stream Habitat Assessment

Streambank erosion was a problem in all streams sampled in the Lamine River basin. Several streams exhibited increased erosion at downstream sites. There was no clear pattern of stream erosion between Prairie streams, such as Muddy Creek, and Ozark border streams, like Richland Creek. Based on habitat samples, both stream types have erosion problems associated with narrow corridors. One advantage Ozark border streams have is increased topographic relief, which is associated with stable, bluff-protected banks. Some bluff protection is also present in Prairie streams such as Muddy and Flat creeks. Streams with the most extensive bank erosion problems were near the lower end of the subbasin (Heath's Creek and Clear Creek). These streams possess little to no wooded corridor and most banks are denuded of vegetation. Middle Richland Creek and Haw Creek were among streams having the most stable banks.

Streambank erosion with massive failings and poor bank protection were evident in areas of stream alterations such as channelization, dredging, and bridges. A sampling reach along Otter Creek is a good example of erosion problems associated with channel alterations. In summary, most erosion problems were associated with barren or narrow corridors, regardless of their physiographic differences. Secondly, any alterations of the channel were detrimental to bank stability in the reach.

Land use bordering narrow corridors is primarily row crop and pasture regardless of the stream being sampled. Any location of modest relief along the stream was generally being farmed. Floodplain scour was evident at several sites, usually associated with a narrow corridor which was unable to reduce floodwater velocities before they entered a field. Cattle grazing was evident at some sampling sites and if present in the corridor, the area possessed a park-like appearance with mature trees and virtually no undergrowth.

Instream fish cover in pools consisted mainly of snag habitat such as rootwads and logs. Woody cover was limited along heavily farmed reaches and some clearing of debris was evident, especially on the mainstem Lamine River. Boulders were present in some pools. Fish cover in pools of all streams generally was rated fair. Instream cover in Muddy Creek was rated highest in the Lamine River Basin while cover in the Richland Creek system was rated low. The mainstem Lamine River also received a low rating for instream cover. Riffle areas offered cobble and boulders as well as water willow as primary cover types. Muddy Creek was rated high in riffle habitat quality while most other streams were rated fair to good in riffle habitat quality. Some reaches of riffle habitat possessed good substrate diversity (bedrock, cobble, boulder and gravel) important to fish and invertebrates. Undercut banks including overhanging bedrock shelves were present at some sites and appeared to be providing quality fish habitat.

Stream depths in pools were rated good to excellent at almost all habitat sampling sites. Increased depth associated with snags and boulders was documented at several sites. Uniform depths were associated with sampling sites located on altered sections of streams such as one on Otter Creek. The mainstem Lamine River was not as deep as expected for a sixth order stream. Most sites possessed maximum depths of eight feet or less.

Gravel and cobble were the predominant substrate forms in almost all streams regardless of their location in the basin. Little silt or other fine substrate was found and when it did occur, it was usually in a strip near the bank. One exception was the mainstem Lamine River which possessed a high proportion of silt at downstream sites. Prairie streams such as Heath's Creek and Muddy Creek possessed higher proportions of silt than other streams in the basin. Streambeds were unstable and uniform along areas associated with man's activities such as channelization or dredging (e.g. Otter Creek, Lake Creek).

No water quality problems were evident at stream habitat sampling sites. Water was usually clear with limited algae during the sampling period. As expected, Ozark border streams had higher water clarity than Prairie streams. One study found Muddy Creek to have turbidities seven times higher than those of Richland Creek (USDA-SCS 1977).

Channel alterations consisted of channel straightening, dredging, levees and problems due to slab bridges. Channel alterations that were observed are documented in individual stream summaries. Channel alterations were not evident at most stream habitat sampling sites. Total length of altered channel, as indicated from topographic maps, for each stream is provided. This information may only represent a small proportion of actual channelization that has occurred in each stream.